

ABSTRACT OF THE DISCLOSURE

A low cost moldable transformer or trans-inductor core, referred to in this description as a transductor. Elements of the transductor core are formed of a conductive loaded resin-based material. The conductive loaded resin-based material comprises micron conductor fibers, micron conductor powders, or in combination thereof homogenized within a base resin host wherein the ratio of the weight of the conductor fibers, conductor powders, or combination thereof to the weight of the base resin host can be between about 0.20 and 0.40. The micron conductive fibers or powders, can be of stainless steel, nickel, copper, silver, carbon, graphite, plated particles, plated fibers, or the like. Transductors can be formed using methods such as injection molding, over-molding, thermo-set, protrusion, extrusion, compression, or the like, in combination with a large number of production or wire wrapping techniques to achieve desired electrical characteristics. The elements and/or cores of the transductor can be virtually any shapes and sizes desired. Parts may also can be cut, stamped, milled or the like, from molded conductive loaded materials that are in sheet or other various forms. The conductive loaded resin-based material provides very efficient coupling and control of electromagnetic energy between a bobbin formed of the conductive loaded resin-based material and a coil of wire wound on the bobbin.